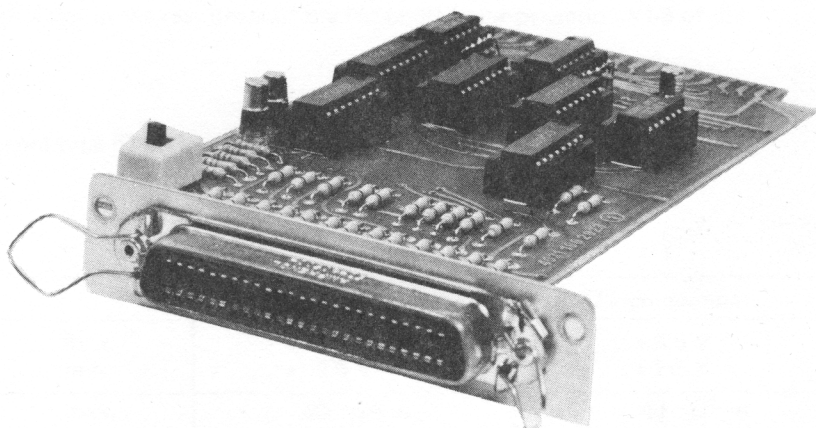


PHILIPS



OPERATING AND SERVICE MANUAL

REMOTE CONTROL UNIT

PM 9685

9446 096 850.1



740615/1/01

Ordering number of this manual
9499 460 07311

1. General

The PM 9685 is used as an interface for the remote control of the PM 6650. The unit can accept either TTL input levels or HNIL input levels, which can be selected using the switch on the unit.

2. Mounting

The unit can be plugged-in through a slot in the rear panel of the PM 6650 (refer to section VI-3 of the operating manual PM 6650).

3. Input connector

The connector is a 50-pole Amphenol type 57-50.
The pinning is shown in figure 1.

4. Input levels

Logic "1" (HIGH)			HNIL-compatible	TTL-compatible
	voltage	max. min.	+ 18 V + 7.5 V	+ 6.5 V + 2.5 V
Logic "0" (LOW)	current	max.	40 μ A in	40 μ A in
	voltage	max. min.	+ 4.5 V - 2.0 V	+ 0.8 V - 2.0 V
	current	max.	0.7 mA out	0.3 mA out

NOTE: HIGH level can be achieved with an open line. LOW level can be achieved by contact closure to ground or via a saturated transistor.

5. Definition of control commands

5.1 Start (pin 46)

A negative pulse having a duration T_d (set gate time $\geq T_d \geq 10 \mu s$) starts one measuring cycle.
The counter will recycle its measuring cycle if the start signal is kept constantly low.

5.2 Reset (pin 21)

A negative pulse resets the counter to zero.

5.3 Remote (pin 25)

When this line is LOW the PM 6650 can only be controlled by the remote input. The manual controls on the front panel are disabled.

5.4 -12 V (pin 48) and +12 V (pin 49)

These voltages are used to supply current to the analog inputs via external programming resistors.

5.5 + Supply V_P (pin 24)

The voltage on this pin is either +12 V when HNIL level is chosen or +5 V when TTL level is chosen.

6. Explanation of remote control functions

6.1 FUNCTION switch

Binary words (H = High, L = Low)

<i>Pin no. 27 26 2 1, D C B A</i>	<i>Functions</i>
H H H H	
H H H L	SUB-UNIT
H H L H	COUNT A
H H L L	RATIO A/B
H L H H	PERIOD A
H L H L	PERIOD AVG. A
H L L H	T.I. A TO B
H L L L	T.I. AVG. A TO B
L H H H	FREQ. A
L H H L	FREQ. C
L H L H	CHECK
L H L L	DISPLAY TEST

6.2 TIME BASE/MULTIPLIER switch

Binary words (H = High, L = Low)

<i>Pin no. 29 28 4 3 D C B A</i>	<i>Time base/Multiplier</i>
H H H H	
H H H L	10 ns/ -
H H L H	100 ns/10 ⁰
H H L L	1 μ s/10 ¹
H L H H	10 μ s/10 ²
H L H L	100 μ s/10 ³
H L L H	1 ms/10 ⁴
H L L L	10 ms/10 ⁵
L H H H	100 ms/10 ⁶
L H H L	1 s/10 ⁷
L H L H	10 s/10 ⁸
L H L L	100 s/10 ⁹
L L H H	1 min/ 6 x 10 ⁸ *
L L H L	1 h /36 x 10 ⁹ *
L L L H	10 min/6 x 10 ⁹ *

* Only possible at remote programming.

6.3 Ancillary functions

The function is active when the relevant pin is LOW.

Function	Pin no	Note
MEMORY	9	Memory is off when level is HIGH
BURST	10	
GATED BY B	11	
ATT. x 10	12	Channel A
AC COUPLING	13	Channel A
– SLOPE	14	Channel A
50 Ω impedance	15	Both on channel A and B
COMMON	40	In this function channel A and B are interconnected. When 50 Ω is selected only channel A is terminated.
LEVEL A	16	A 1 k Ω internal resistor gives ± 3 V max. trigger level for ± 3 mA input current
LEVEL B	41	
START	34	
STOP	35	
ATT. x 10	37	Channel B
AC COUPLING	38	Channel B
– SLOPE	39	Channel B

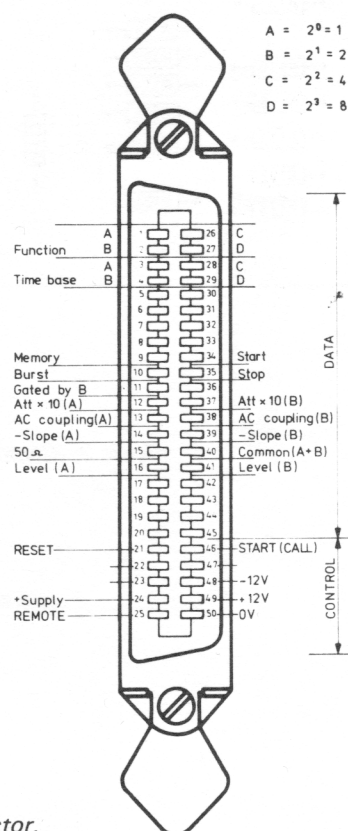


Figure 1. Pinning of the connector.

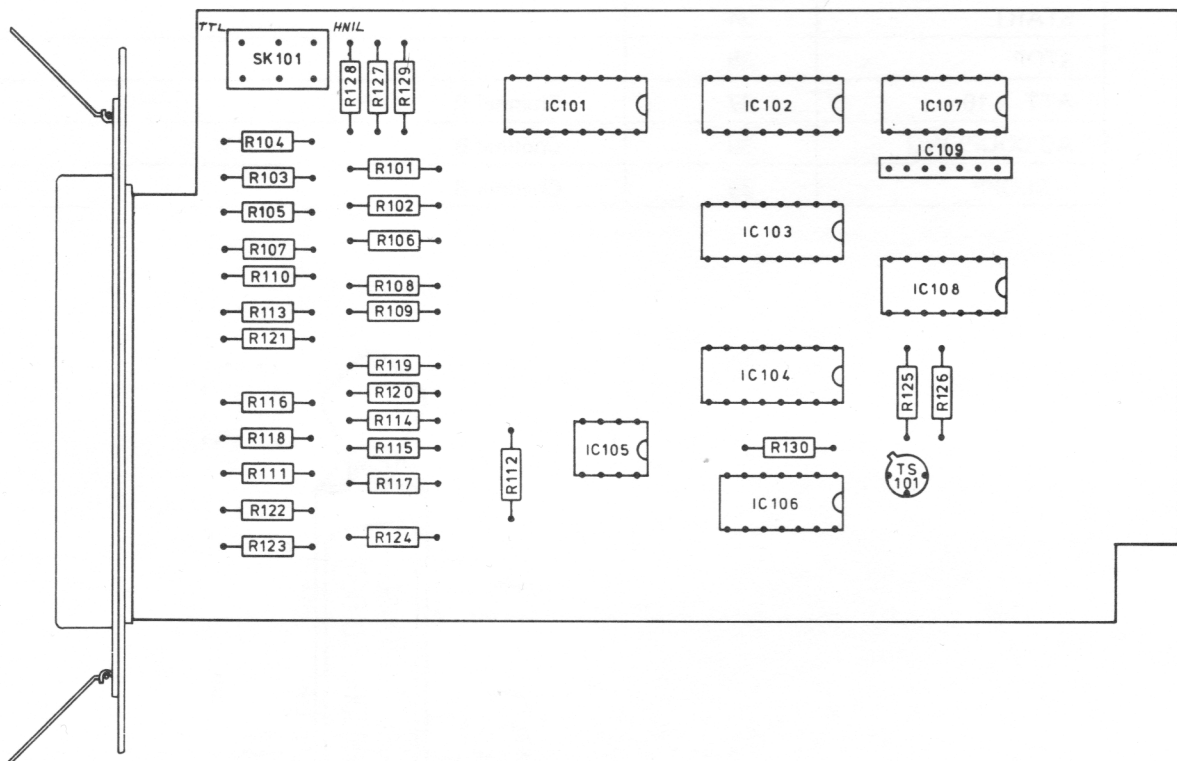


Figure 2. Component layout PM9685.

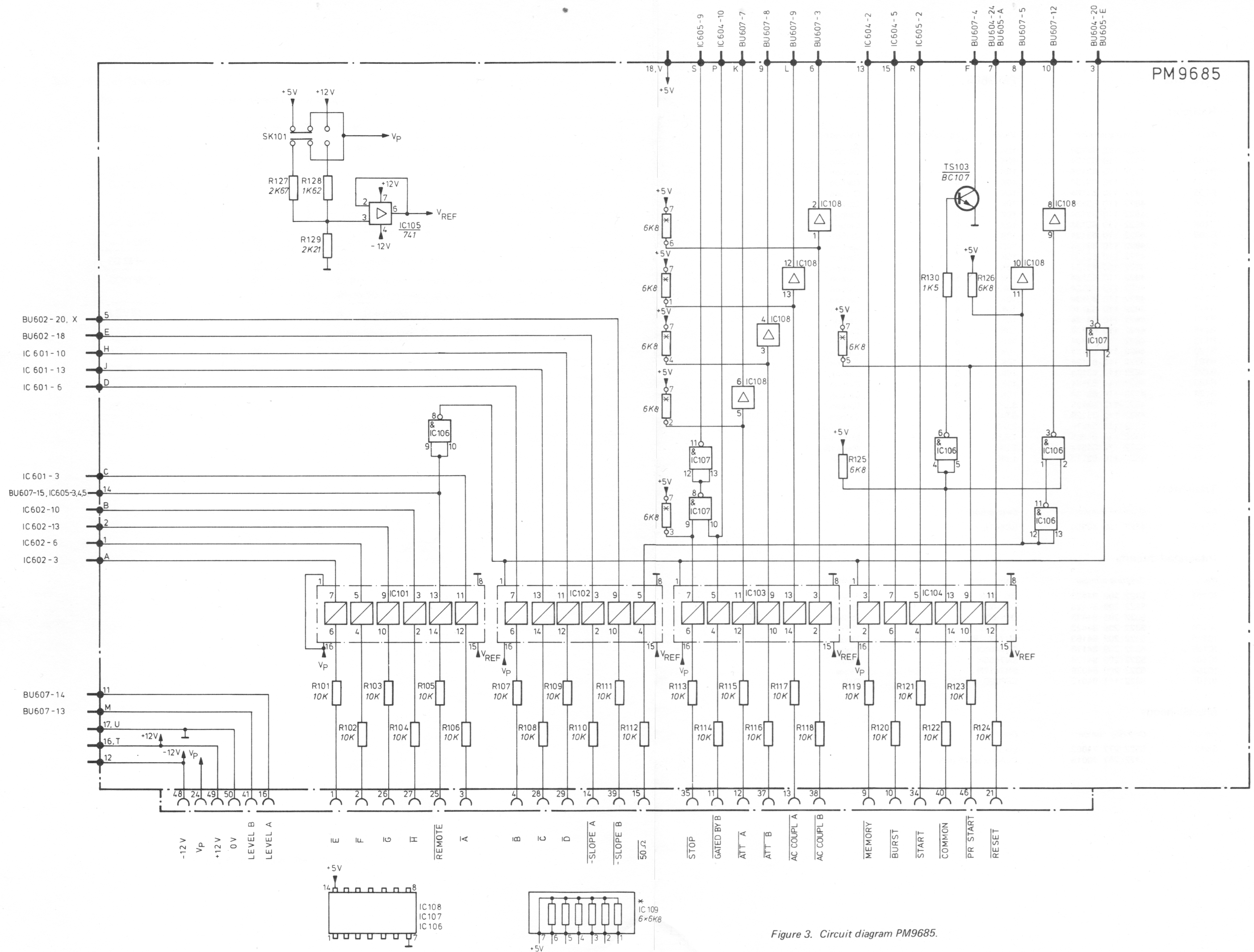


Figure 3. Circuit diagram PM9685.

Parts lists**PM 9685****Resistors**

<i>No.</i>	<i>Ordering number</i>	<i>Value</i>	<i>Tolerance (%)</i>	<i>Description</i>
R101	4822 110 63134	10K	5	Carbon
R102	4822 110 63134	10K	5	Carbon
R103	4822 110 63134	10K	5	Carbon
R104	4822 110 63134	10K	5	Carbon
R105	4822 110 63134	10K	5	Carbon
R106	4822 110 63134	10K	5	Carbon
R107	4822 110 63134	10K	5	Carbon
R108	4822 110 63134	10K	5	Carbon
R109	4822 110 63134	10K	5	Carbon
R110	4822 110 63134	10K	5	Carbon
R111	4822 110 63134	10K	5	Carbon
R112	4822 110 63134	10K	5	Carbon
R113	4822 110 63134	10K	5	Carbon
R114	4822 110 63134	10K	5	Carbon
R115	4822 110 63134	10K	5	Carbon
R116	4822 110 63134	10K	5	Carbon
R117	4822 110 63134	10K	5	Carbon
R118	4822 110 63134	10K	5	Carbon
R119	4822 110 63134	10K	5	Carbon
R120	4822 110 63134	10K	5	Carbon
R121	4822 110 63134	10K	5	Carbon
R122	4822 110 63134	10K	5	Carbon
R123	4822 110 63134	10K	5	Carbon
R124	4822 110 63134	10K	5	Carbon
R125	4822 110 63129	6.8K	5	Carbon
R126	4822 110 63129	6.8K	5	Carbon
R127	5322 116 54578	2.67K	1	Metal film
R128	5322 116 54565	1.62K	1	Metal film
R129	5322 116 54574	2.21K	1	Metal film
R130	4822 110 63112	1.5K	5	Carbon

Transistors

<i>No.</i>	<i>Ordering number</i>	<i>Description</i>
TS101	4822 130 40959	BC547B

Integrated circuits

<i>No.</i>	<i>Ordering number</i>	<i>Description</i>	<i>Remarks</i>
IC101	5322 209 84423	OQ-003	Philips
IC102	5322 209 84423	OQ-003	Philips
IC103	5322 209 84423	OQ-003	Philips
IC104	5322 209 84423	OQ-003	Philips
IC105	5322 209 84163	SN72741P	Texas
IC106	5322 209 84178	SN7400N	Texas
IC107	5322 209 84178	SN7400N	Texas
IC108	5322 209 84036	SN7417N	Texas
IC109	5322 111 94012	CSP08C	Dale

Miscellaneous

<i>Item</i>	<i>Ordering number</i>	<i>Description</i>
SK101	5322 277 24003	Switch
	5322 267 70015	Connector, 50-pole

QUALITY REPORTING

CODING SYSTEM FOR FAILURE DESCRIPTION

The following information is meant for Philips service workshops only and serves as a guide for exact reporting of service repairs and maintenance routines on the workshop charts.

For full details reference is made to Information G1 (Introduction) and Information Cd 689 (Specific information for Test and Measuring Instruments).

LOCATION

Unit number

e.g. 000A or 0001 (for unit A or 1; **not 00UA or 00U1**)

or: Type number of an accessory (only if delivered with the equipment)

e.g. 9051 or 9532 (for PM 9051 or PM 9532)

or: Unknown/Not applicable
0000

CATEGORY

☐

- 0 Unknown, not applicable (fault not present, intermittent or disappeared)
- 1 Software error
- 2 Readjustment
- 3 Electrical repair (wiring, solder joint, etc.)
- 4 Mechanical repair (polishing, filing, remachining, etc.)
- 5 Replacement
- 6 Cleaning and/or lubrication
- 7 Operator error
- 8 Missing items (on pre-sale test)
- 9 Environmental requirements are not met

COMPONENT/SEQUENCE NUMBER

Enter the identification as used in the circuit diagram, e.g.:

GR1003	Diode GR1003
TS0023	Transistor TS23
IC0101	Integrated circuit IC101
R0....	Resistor, potentiometer
C0....	Capacitor, variable capacitor
B0....	Tube, valve
LA....	Lamp
VL....	Fuse
SK....	Switch
BU....	Connector, socket, terminal
T0....	Transformer
L0....	Coil
X0....	Crystal
CB....	Circuit block
RE....	Relay
BA....	Battery
TR....	Chopper

Parts not identified in the circuit diagram:

990000	Unknown/Not applicable
990001	Cabinet or rack (text plate, emblem, grip, rail, graticule, etc.)
990002	Knob (incl. dial knob, cap, etc.)
990003	Probe (only if attached to instrument)
990004	Leads and associated plugs
990005	Holder (valve, transistor, fuse, board, etc.)
990006	Complete unit (p.w. board, h.t. unit, etc.)
990007	Accessory (only those without type number)
990008	Documentation (manual, supplement, etc.)
990009	Foreign object
990099	Miscellaneous

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